SIDDHARTH GROUP OF INSTITUTIONS :: PUTTUR
Siddharth Nagar, Narayanavanam Road – 517583

QUESTION BANK (DESCRIPTIVE)

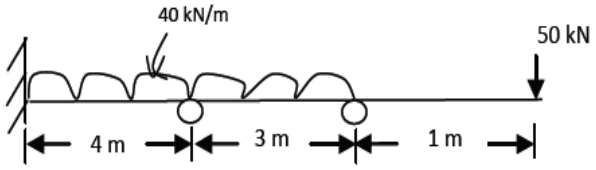
Subject with Code : SA-II (13A01505) **Course & Branch**: B.Tech – CE

Year & Sem: III-B.Tech & I-Sem **Regulation:** R13

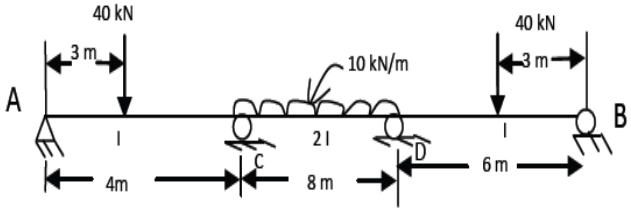
UNIT – III

KANI'S METHOD

1. Determine the moments at supports if support B yield by 10 mm under the given loading for the beam as show in figure below by Kani's method, $E=2.05x10^5$ N/mm^2 ,$I=30x10$ mm^4. 10M



2. Determine the end moments of the continuous beam as shown in figure below by Kani's method. E is constant. 10M



3.(a) Explain how settlement of supports in accounted in to Kani's method of analysis of structures. 5M

(b) Explain how portal frames with side sways are analysed. 5M

4. Analyse the structure shown in figure using Kani's method and draw BMD. 10M

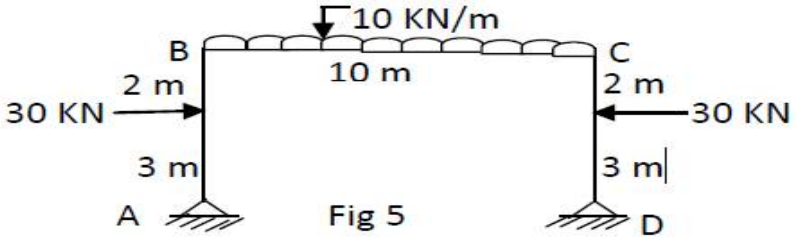
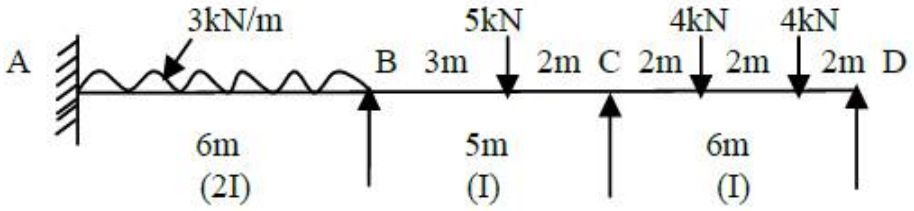


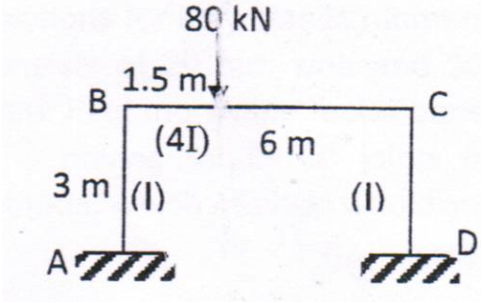
Fig 5

5. Analyse the continuous beam shown in figure by Kani's method and sketch the B.M diagram gives all the salient values 10M

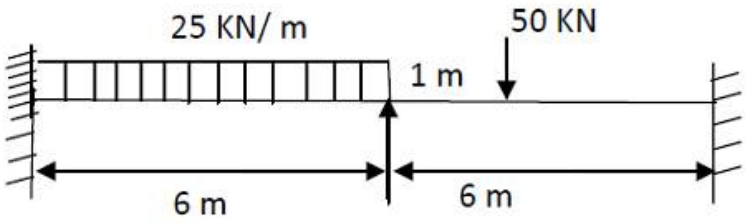


6. A two span continuous beam ABC rests on simple supports at A,B and C. All the three supports are at same level. The span AB=5m and span BC=4m. The span AB carries a uniformly distributed load of 15kN/m and span BC carries a central point load of 25kN. EI is constant for the whole beam. Find the moments and reactions at all the supports and draw the bending moment diagram using Kani's method. 10M

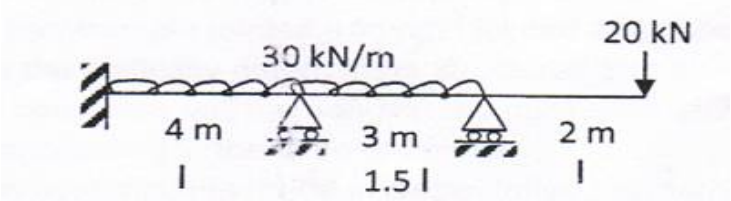
7. Analyze the frame shown in figure using kani's method 10M



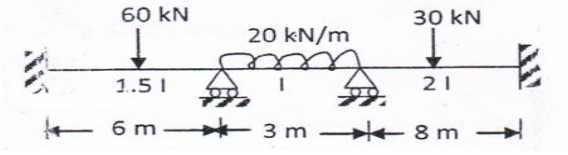
8. (a) Explain Kani's method of solving a frame subjected to sway forces. 4M
(b) Evaluate the bending moment and shear force diagrams of a beam in figure by the Kani's method 6M



9. Analyse the continuous beam shown in figure using Kani's method 10M



10. a) Calculate the rotation factors for the beam shown in figure below 2M



b) Write advantage of Kani's method 2M
c) What is the purpose of Kanis method analysis? 2M
d) Define Rotation factor 2M
e) Define Stiffness of joint. 2M

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UNIT-III

KANI'S METHOD

1. The following methods are used for structural analysis: [ ]
   i) Macaulay method
   ii) Column analogy method
   iii) Kani's method
   iv) Method of sections

   Those used for indeterminate structural analysis would include:

   A) i and ii B) i and iii C) ii and iii D) ii, iii and iv

2. The distribution factor of a member at a joint is: [ ]
   A) The ratio of the moment borne by the member to the total moment applied at the joint
   B) The ratio of the area of the member to the sum of the areas of several members
   C) The ratio of the moment induced at the far end to the moment applied at the near end
   D) None of the above

3. Kani's 'Rotation Contribution' method is advantageous over Moment distribution method since [ ]
   A) Kani's method is iterative
   B) Any arithmetic error that creeps in will automatically get corrected
   C) It involves actual solution of simultaneous equations
   D) None of the above

4. Sway calculations and non-sway calculations are carried out in a single operation in [ ]

   A) Kani's method B) Moment distribution method
   C) Unit load method D) none

5. If the preliminary dimensions of the sections are changed relatively, the analysis can be modified fast in [ ]
   A) Moment distribution method B) Kani's method
   C) Double integration method D) Consistent deformation method

6. When an end of continuous beam is fixed, in Kani's method, the rotation contribution will be: [ ]

   A) 0 B) EI/l C) 2EI/l D) EI

7. In Kani's method an overhand can be conveniently dealt with be regarding it as a member with _____ length. [ ]

A) Infinite B) zero C) unit D) none

8. In Kani's method, the displacement contribution of a member with a sway of δ is: [ ]

A) EI δ B) $6EI\delta/l^2$ C) $4EI\delta/l$ D) $3EI/l$

9. Kani's Method was introduced by: [ ]

A) Gasper Kani B) G.A. Maney C) Hardy Cross D) None

10. Rotation factor is defined as: [ ]

A) 0.5DF B) 0.25DF C) -0.5 DF D) -0.25DF

11. A Continuous beam ABC, supports A and C are fixed and support B simply supported carries an udl of 3 kNm^{-1} over AB span. Span AB=6m, BC=4m.Fixed end moment at A [ ]

A) -9kNm B) 9.5kNm C) -8.5 kNm D) 8kNm

12. A Continuous beam ABC, supports A and C are fixed and support B hinged carries an udl of 3 kNm^{-1} over BC span. Span AB=6m, BC=4m Fixed end moment at B [ ]

a) -9kNm b) 9kNm c) -4 kNm d) 4 kNm

13. The distribution factor of a member at a joint is: [ ]

A) The ration of the moment borne by the member to the total moment applied at the joint
A) The ration of the area of the member to the sum of the areas of several members
B) The ratio of the moment induced at the far end to the moment applied at the near end
C) None of the above

14. A beam is completely analysed, when [ ]

A) Support reactions are determined
B) Shear and moment diagrams are found
C) The moment of inertia is uniform throughout the length
D) All of the above

15. A rigid frame is a structure composed of members which are connected by [ ]

A) Rigid joints B) simple bearing C) a single rivet D) none of the above

16. Consider the following statements [ ]

Sinking of an intermediate support of a continuous beam

i. Reduces the negative moment at a support
ii. Increases the negative moment at a support
iii. Reduces the positive moment at a support
iv. Increases the positive moment at the centre of span

Of these statements, which are correct

A) 1 and 4 B) 1 and 3 C) 2 and 3 D) 2 and 4

17. For the application of moment area method, for finding deflection at a section in a beam [ ]

A) The position of at least one tangent to the elastic curve, should be known
B) The M/EI diagram must be a triangle
C) The beam must be of uniform moment of inertia
D) The B.M. diagram if known is sufficient

18. Which of the following is not the displacement method [ ]
A) Equilibrium method B) Moment Distribution method
C) Column analogy method D) Kani's method

19. Which of the following methods of structural analysis is a Force method [ ]
A) Slope deflection method B)Moment Distribution method
C) Column analogy method D)Kani's method

20. The force required for a spring produced by unit displacement is called' [ ]
A) Flexibility B) stiffness C) torsional D) none

21.In the displacement method of structural analysis the basic unknowns are [ ]
A) Displacement B) force C) displacement & Force D) none of the above

22.The analysis of multistoried frames are done by [ ]
A)slope deflection method B)moment distribution method
C)Kani's method D)None

23.Rotation factor for fixed ended beam is calculated by kani's method is [ ]
A) - 0.5 K/∑ K B)-0.4 K/∑ K C)-0.3 K/∑ K D)None

24.Fixed end moment from A to B for beam AB carries eccentric load is [ ]
A) $W a^2 b/l^2$ B) $W a b^2/ l^2$ C)W a b/l D)none

25.Final moments calculated by which formula [ ]
A) FEM+2 NEC +FEC B) FEM+NEC+2FEC C) FEM+2NEC D)None

26.Displacement factor for fixed ended beam is calculated by kani's method is [ ]
A) -1.5 k/∑k B) -1.4 k/∑k C) -1.3 k/∑k D)none

27.In portion AB, the free moment diagram is a symmetric triangle with maximum ordinate as [ ]
A) $WL^2/12$ B)WL/8 C) WL/4 D)WL/3

28.In portion BC, the free moment diagram is a symmetric parabola with maximum ordinate as [ ]
A) $WL^2/8$ B)WL/8 C) WL/4 D)WL/3

29.In a rigid jointed frame, the rotating members meeting at the joint will be [ ]
A) Equal
B) Proportional to the length of the member
C) Proportional to the stiffness
D) Proportional to the respective moment of inertia

30. Displacement factors for column if there is say in the frame. [ ]

A) -3/4(K/∑K) B) -3/5(K/∑K) C) -3/2(K/∑K) D) -2/3(K/∑K)

31. Storey moment is [ ]

A) $S_r h_r/3$ B) S_r/h_r C) $3h_r/S_r$ D) None

32. To start with, unknown values of all rotation contribution and displacement contribution are taken equal to [ ]

A) 1 B) -1 C) Zero D) None

33. Due to lateral sway causes additional moments in the column, which may be called [ ]

A)Rotation contribution B) Displacement contribution

C) Torsional Contribution D) None

34.Rotation at the fixed end [ ]

A) L/2 B) L/4 C) Zero D) none

35. Net moment at the support [ ]

A) Zero B) double C) half D) none

36. Bending Moment is _____ to shear force [ ]

A) directly proportional B) indirectly proportional

C) equal D) all the above

37. Stiffness of beam if far end is hinged [ ]

A) 4EI/L B) 3EI/L C) 2EI/L DEI/L

38. Degree of freedom for fixed end condition beam [ ]

A) Zero B) 1 C) 2 D) 3

39. A fixed beam is subjected to udl over its entire span. The joints of contraflexure will occur on either side of the center at a distance of _____ from the center. [ ]

A) l/√3 B) l/3 C) l/2√3 D) l/4√3

40. A beam is a structural member predominantly subjected to [ ]

A) Transverse loads B) axial forces C) twisting moment D) none of the above

Prepared by: **J.K.Elumalai**